

REMARKS

Claims 1, 3, 4, 10-12 & 16 have been amended. Claims 1-20 are currently pending in the present application. Reexamination and reconsideration of the application, as amended, are respectfully requested.

REJECTION OF CLAIMS 3, 4, 10-12 & 16 UNDER 35 U.S.C. 112

Claims 3, 4, 10-12 & 16 are rejected under 35 U.S.C. 112, second paragraph for the reasons set forth in on page 2 of the Action. Specifically, regarding claims 3 & 4, the Action states that the phrase “the navigation array” lacks antecedent basis. In response, claims 3 & 4 have been amended to depend on claim 2, which provides the proper antecedent basis for “the navigation array.” Regarding claims 10-12, the Action states that the phrase “the NSA” lacks antecedent basis. In response, claims 10-12 have been amended to replace NSA with navigation array, which has proper antecedent basis. Also, claims 10-12 have been amended to replace ISA with imaging array so that proper antecedent basis is maintained. Regarding claims 16, the Action states that the phrase “navigation engine” lacks antecedent basis. In response, claim 16 has been amended to provide the proper antecedent basis. No new matter has been added. Accordingly, it is respectfully submitted that claims 3, 4, 10-12 and 16 now fully comply with the requirements of second paragraph of 35 U.S.C. 112. It is respectfully requested that the rejections of the claims under 35 U.S.C. 112, second paragraph be withdrawn.

REJECTION OF CLAIMS UNDER 35 U.S.C. 102

Rejection of Claims under 35 U.S.C. 102(e) – Upton Reference

Claims 1, 3, 5, and 9 are rejected under 35 U.S.C. 102(e) for the reasons set forth in paragraph 4 of the Action on page 3. Specifically, claims 1, 3, 5, and 9 are rejected under 35

U.S.C. 102(e) as being anticipated by Upton (U.S. Pat. No. 6,052,475), which is hereinafter referred to as "Upton" or "the Upton reference."

The rejections under 35 U.S.C. 102(e) are respectfully traversed, at least insofar as applied to the amended claims, and reconsideration and reexamination of the application is respectfully requested for the reasons set forth herein below.

Figure 1 (specifically elements 20 & 22), Column 3, lines 50-54, and Column 4, lines 4-7 and lines 7-9, of the Upton reference are cited as teaching the fingerprint imager as claimed. It is respectfully submitted that Upton fails to teach or suggest the fingerprint imager as claimed.

It appears that the Upton fingerprint detector operates in the following manner. First, a fingerprint detector is provided which includes a skin resistance sensing array for translating skin resistance of a fingertip into a sample trajectory signal. The sample trajectory signal corresponds to conductance changes in the skin resistance, which is a function of ridges and valleys of the fingertip, as it is moved across the sensing array surface. The sensing array includes at least one sensor positioned for contacting a fingertip and allowing relative movement between the fingertip and the sensor. The sensing array is coupled to a sampling circuit, which translates the sample trajectory signal into a digital signal. The fingerprint detector further includes a processor to receive the digital sample trajectory signal, compare it with a reference trajectory signal and execute a verification algorithm.

Specifically, the Upton reference fails to teach or suggest inter alia the following claim limitations:

"a plurality of sensors arranged along a first axis for capturing a sub-image of the fingerprint at one time," as claimed in claim 1.

Sensing array 20 is cited for teaching the plurality of sensors as claimed. However, it is respectfully submitted that the sensing array 20 is very different from the plurality of sensors as claimed.

Furthermore, the sensing array 20 of Upton performs a very different function than the plurality of sensors as claimed. The sensing array 20 of Upton measures a fingertip velocity function (see col. 4, line 9), whereas the sensors as claimed are for “capturing a sub-image of the fingerprint.”

Moreover, the sensing array 20 of Upton includes components that form a resistive voltage divider circuit (see col. 4, line 32-33). FIG. 4 of Upton describes how the “voltage divider circuit formed by the sensing array 20 is completed when a fingertip ridge 60 of fingerprint 14 forms a second variable resistor connecting conducting layer 22 with a conducting wire 18.” (see col. 4, lines 46-50)

Upton further states

Fingertip ridges 60 behave like variable resistors, and fingertip valleys 62 behave like open circuits. The voltage drop across fingertip ridge 60 creates the sample trajectory signal, which represents the resistive characteristic of human skin. Each sample trajectory signal is produced by the continuous curvilinear trajectory formed by fingertip ridges 60 and valleys 62, as traced by a sensing element 16, and represents electrical conductance changes in the skin resistance of the fingertip 12. (col. 4, lines 50-59)

As can be appreciated, the generation of sample trajectory signal, which represents the resistive characteristic of human skin with voltage divider circuits is very different from the sensors for capturing a sub-image of a fingerprint, as claimed.

The dependent claims incorporate all the limitations of the independent claim. In this regard, the dependent claims 3, 5, and 9 also add additional limitations, thereby making the dependent claims a fortiori and independently patentable over the cited references.

In view of the foregoing, it is respectfully submitted that the Upton reference fails to teach or suggest the optical navigation device as claimed. Accordingly, it is respectfully requested that the claim rejections under 35 U.S.C. section 102(e) be withdrawn.

Rejection of Claim 20 under 35 U.S.C. 102(e) – Kramer Reference

Claim 20 is rejected under 35 U.S.C. 102(e) for the reasons set forth in paragraph 5 of the Action on page 3. Specifically, claim 20 is rejected under 35 U.S.C. 102(e) as being anticipated by Kramer (U.S. Pat. No. 6,317,508), which is hereinafter referred to as the Kramer reference.

The rejections under 35 U.S.C. 102(e) are respectfully traversed, at least insofar as applied to the amended claims, and reconsideration and reexamination of the application is respectfully requested for the reasons set forth herein below.

Column 2, lines 24-27, Column 2, lines 43-57, Column 2, lines 58-65, Column 3, lines 6-8, and Column 3, lines 8-14 of the Kramer reference are cited as teaching the method of imaging an object as claimed. It is respectfully submitted that Kramer fails to teach or suggest the method of imaging an object as claimed.

Specifically, the Kramer reference fails to teach or suggest inter alia the following claim limitations:

“based on the movement information, determining when to capture a sub-image of the object by using an imaging sensor array having a plurality of pixels for imaging a portion of the object at one time,” as claimed in claim 20.

For example, it appears that the Kramer fingerprint detector employs a fixed scanning rate. (See Col. 2, lines 61-65). In contrast, the imaging method according to the invention captures sub-images of the object based on movement information.

In view of the foregoing, it is respectfully submitted that the Kramer reference fails to teach or suggest the method of imaging an object as claimed. Accordingly, it is respectfully requested that the rejection of claim 20 under 35 U.S.C. section 102(e) be withdrawn.

REJECTION OF CLAIMS UNDER 35 U.S.C. 103

Rejection of Claims 2 & 18 under 35 U.S.C. 103(a) – Upton Reference in view of Jensen

Reference

Claims 2 and 18 are rejected under 35 U.S.C. 103(a) for the reasons set forth in paragraph 7 of the Action on pages 4 and 5. Specifically, claims 2 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Upton (U.S. Pat. No. 6,052,475), in view of Jensen (U.S. Pat. No. 4,784,484), which is hereinafter referred to as the Jensen reference.

The rejections under 35 U.S.C. 103 are respectfully traversed, at least insofar as applied to the amended claims, and reconsideration and reexamination of the application is respectfully requested for the reasons set forth hereinbelow.

Column 4, lines 7-9 of the Upton reference is cited as teaching the fingerprint imager as claimed in claim 2 except a navigation circuit for controlling when the imaging array captures images of the fingerprint. The Column 1, lines 60-65 of Jensen is cited for teaching “the use of rate of movement to synchronize scanning.”

It is respectfully submitted that Upton, whether alone or in combination with Jensen, fails to teach or suggest the fingerprint imager as claimed.

Specifically, it is respectfully submitted that Upton reference, whether alone or in combination with the Jensen reference, fails to teach or suggest the following:

“a navigation array having a plurality of sensors for capturing navigation images of a portion of the fingerprint as the fingerprint moves with respect to the navigation array; and

a navigation circuit, coupled to the navigation array, for controlling when the navigation array captures navigation images and for receiving the navigation images and based thereon for determining the amount of movement of a fingerprint generally along the first axis and the amount of movement of a fingerprint along a second axis that is generally perpendicular to the first axis,” as claimed in claim 2.

Jensen operates in a very different manner than the imager as claimed. Measuring means 5 appears to be wires that measure the skin resistance (see col. 1, lines 60-61 and 66 and col. 2, lines 42-64). FIG. 1 illustrates a “double skin resistance measuring circuit 12” for measuring the skin resistance. However, there is no teaching or suggestion of a navigation array or a navigation circuit as claimed. Moreover, Upton and Jensen also do not appear to “capture navigation images.” It does not even appear that the systems of Upton and Jensen capture “images”, but instead captures an electrical signal representation of the fingerprint (see Abstract, lines 7 and 8).

Furthermore, the Federal Circuit has held, “It is impermissible to use the claimed invention as an instruction manual or “template” to piece together the teachings of the prior art so that the claimed invention is rendered obvious. This court has previously stated that “[o]ne cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.” (quoting In re Fine, 837 F.2d 1071, 1075, 5 USPQ 2d 1596, 1600 (Fed. Cir. 1988)), In re Fritch, 23 USPQ 2d 1780, 1784 (Fed. Cir. 1992).

It is respectfully submitted that the claimed invention has been improperly used as an instruction manual or “template” to piece together the teachings of the Upton reference and the Jensen so that the claimed invention is rendered obvious. Accordingly, for these reasons, and for the reasons discussed above, it is respectfully submitted that claims 2 & 18 patentably

distinguish over Upton in view of Jensen. Withdrawal of this rejection under 35 U.S.C. section 103(a) is respectfully requested.

Rejection of Claims 6-8 under 35 U.S.C. 103(a) – Upton Reference in view of Brownlee

Reference

Claims 6-8 are rejected under 35 U.S.C. 103(a) for the reasons set forth in paragraph 8 of the Action on page 5. Specifically, claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Upton (U.S. Pat. No. 6,052,475) in view of Brownlee (U.S. Pat. No. 6,282,303), which is hereinafter referred to as the Brownlee reference.

The rejections under 35 U.S.C. 103 are respectfully traversed, at least insofar as applied to the amended claims, and reconsideration and reexamination of the application is respectfully requested for the reasons set forth hereinbelow.

The Brownlee reference is cited for teaching the implementation of a fingerprint imager in a stand-alone unit with optics for focusing light onto the surface.

For the reasons advanced previously, which are incorporated herein by reference, Upton fails to teach or suggest one or more claimed limitations of the independent claims. Brownlee does not remedy the deficiencies of Upton's teachings, nor does Brownlee supplement the teaching of Upton in a manner to render the claimed invention obvious. Specifically, Brownlee, whether alone or in combination with Upton, fails to teach or suggest, "a) an imaging array having a plurality of sensors arranged along a first axis for capturing a sub-image of the fingerprint at one time; wherein the fingerprint is moved with respect to the imaging array in a direction that is generally perpendicular to the first axis; and b) a mechanism for determining a change in the position of the fingerprint with respect to time and controlling the image capture of the imaging array," as claimed.

For example, Brownlee uses a rotation detector to detect the rotational movement of the roller. Apparently, the rotational movement of the roller is then used by Brownlee to re-create the fingerprint by line-image data collected by a linear array imaging sensor. As is evident, the Brownlee scheme is very different from a “mechanism for determining a change in the position of the fingerprint with respect to time and controlling the image capture of the imaging array” as claimed.

Accordingly, for these reasons, and for the reasons discussed above, it is respectfully submitted that claims 6-8 patentably distinguish over Upton in view of Brownlee. Withdrawal of this rejection under 35 U.S.C. section 103(a) is respectfully requested.

Rejection of Claims 4, 10-14 & 16 under 35 U.S.C. 103(a) – Upton Reference in view of
Akizuki Reference

Claims 4, 10-14 & 16 are rejected under 35 U.S.C. 103(a) for the reasons set forth in paragraph 9 of the Action on pages 5 & 6. Specifically, claims 4, 10-14 & 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Upton (U.S. Pat. No. 6,052,475), in view of Akizuki (U.S. Pat. No. 6,360,004), which is hereinafter referred to as the Akizuki reference.

The rejections under 35 U.S.C. 103 are respectfully traversed, at least insofar as applied to the amended claims, and reconsideration and reexamination of the application is respectfully requested for the reasons set forth hereinbelow.

The Akizuki reference, whether alone or in combination with Upton fails to teach or suggest “an imaging array having a plurality of sensors arranged along a first axis for capturing a sub-image of the fingerprint at one time; wherein the fingerprint is moved with respect to the imaging array in a direction that is generally perpendicular to the first axis; and

b) a mechanism for determining a change in the position of the fingerprint with respect to time and controlling the image capture of the imaging array.

The Akizuki reference is cited for teaching an imaging array separate from the navigation array. However, Col. 3, lines 1 and 2 describes a sensor 1 in the following manner: “the fingerprint and position sensor 1 can act not only as a fingerprint sensor but as a position sensor.” Assuming arguendo that the sensor of Akizuki teaches either the imaging array or the mechanism for determining a change in the position of the fingerprint with respect to time, as claimed, the above section of Akizuki seems to teach the opposite of the Action’s position. Instead of being separate from each other, as claimed, Akizuki seems to teach that the imaging array and the mechanism are one and the same.

Assuming arguendo that Akizuki may be properly combined with Upton, the resulting combination would not teach or suggest the fingerprint imager as claimed. For example, the Akizuki reference teaches away from the claimed invention by employing sensor 1 both as a fingerprint sensor and as a position sensor. In contrast, the claimed invention uses the mechanism to control the imaging array. Since the Akizuki sensor can only be used either as a fingerprint sensor or as a position sensor at any one time, the sensor of Akizuki does not fairly teach “a mechanism for determining a change in the position of the fingerprint with respect to time and controlling the image capture of the imaging array” as claimed.

Moreover, the Akizuki device would be inoperable if configured as suggested by the Action because the sensor 1 cannot be used as a fingerprint sensor and at the same time control itself for the fingerprint sensing process.

Accordingly, for these reasons, and for the reasons discussed above, it is respectfully submitted that claims 4, 10-14 & 16 patentably distinguish over Upton in view of Akizuki. Withdrawal of this rejection under 35 U.S.C. section 103(a) is respectfully requested.

Rejection of Claims 15 & 17 under 35 U.S.C. 103(a) – Upton Reference in view of
Tschudi Reference

Claims 15 & 17 are rejected under 35 U.S.C. 103(a) for the reasons set forth in paragraph 10 of the Action on pages 7 & 8. Specifically, claims 15 & 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Upton (U.S. Pat. No. 6,052,475), in view of Tschudi (WO 98/58342), which is hereinafter referred to as the Tschudi reference.

The rejections under 35 U.S.C. 103 are respectfully traversed, at least insofar as applied to the amended claims, and reconsideration and reexamination of the application is respectfully requested for the reasons set forth hereinbelow.

The Tschudi reference is cited for teaching the use of a 1 x N sensor array. However, Upton whether alone or in combination with Tschudi, fails to teach or suggest “an imaging strobe generator for employing the change in position to selectively control when the imaging array captures sub-images” as claimed in claim 15.

As noted previously, the Upton reference employs an entirely different technique to detect fingerprints based on skin resistance and the conversion of skin resistance into a trajectory signal. There is no concept of a “capturing sub-images” or the provision of an “imaging strobe generator” as claimed. Furthermore, it appears that the Tschudi reference, whether alone or in combination with Upton, does not fairly teach or suggest the imaging array strobe generator, the composite image generation software, or the identification software as claimed.

Accordingly, for these reasons, and for the reasons discussed above, it is respectfully submitted that claims 15 & 17 patentably distinguish over Upton in view of Tschudi. Withdrawal of this rejection under 35 U.S.C. section 103(a) is respectfully requested.

Rejection of Claim 19 under 35 U.S.C. 103(a) – Akizuki Reference in view of Kramer

Reference

Claim 19 is rejected under 35 U.S.C. 103(a) for the reasons set forth in paragraph 11 of the Action on page 8. Specifically, claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Akizuki (U.S. Pat. No. 6,360,004), in view of Kramer et al. (U.S. Pat. No. 6,317,508).

The rejections under 35 U.S.C. 103 are respectfully traversed, at least insofar as applied to the amended claims, and reconsideration and reexamination of the application is respectfully requested for the reasons set forth hereinbelow.

Akizuki, whether alone or in combination with Kramer et al. fails to teach or suggest inter alia the following:

a) an imaging sensor array having a plurality of sensors arranged along a first axis for imaging a portion of the fingerprint at one time in response to an asserted imaging sensor array strobe signal;

b) a navigation sensor array having a plurality of sensors for obtaining movement information of the object in response to an asserted navigation sensor array strobe signal,” as claimed in claim 19.

Col. 3, lines 23 –33 that describe a fingerprint and positional detection control signal CS from the host computer is cited to render obvious the invention as claimed.

First, fingerprint and positional detection control signal CS from the host computer does not fairly teach or suggest “the imaging sensor array strobe signal” or “the asserted navigation sensor array strobe signal” as claimed. Second, the fingerprint and positional detection control signal CS of Akizuki is employed by the controller 2 to determine which mode of operation (i.e., position detection or fingerprint detection). In contrast, the “the

imaging sensor array strobe signal” or “the asserted navigation sensor array strobe signal” are utilized to control the “the imaging sensor array” and “the navigation sensor array,” respectively.

Accordingly, for these reasons, and for the reasons discussed above, it is respectfully submitted that claim 19 patentably distinguishes over Akizuki in view of Kramer. Withdrawal of this rejection under 35 U.S.C. section 103(a) is respectfully requested.

Conclusion

For all the reasons advanced above, it is respectfully submitted that the application is in condition for allowance. Reexamination and reconsideration of the pending claims are requested, and allowance is earnestly solicited at an early date. The Examiner is invited to telephone the undersigned if the Examiner has any suggestions, thoughts or comments, which might expedite the prosecution of this case.

Respectfully submitted,



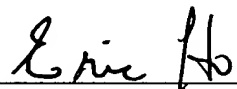
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I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231 on the date below.



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August 11, 2003
(Date)